

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Withdrawn) An internal combustion engine, comprising:

a body defining at least a portion of a main combustion chamber, the main combustion chamber adapted to receive a dilute combustion mixture;

a compression member in the main combustion chamber movable to compress the dilute combustion mixture;

an auxiliary combustion cavity in the body disposed adjacent to and having an open end in fluid communication with the main combustion chamber, the auxiliary combustion cavity being adapted to receive a portion of the dilute combustion mixture through the open end such that substantially all of the combustion mixture received in the auxiliary combustion cavity is provided from the dilute combustion mixture received in the main combustion chamber;

an ignition source residing in the auxiliary combustion cavity substantially at an end of the cavity opposing the open end; and

an apertured member adjacent to the ignition source and having one or more apertures therein, the apertures operable to allow passage of the combustion mixture from the combustion mixture supplied to the main combustion chamber to the ignition source and, upon ignition of the combustion mixture in the auxiliary combustion cavity, jet a portion of the ignited combustion mixture from the auxiliary combustion cavity into the main combustion chamber.

2. (Canceled)

3. (Withdrawn) The internal combustion engine of claim 1 wherein the compression member is a piston reciprocating in the main combustion chamber.

4. (Withdrawn) The internal combustion engine of claim 1 wherein the body is a cylinder head.

5. (Withdrawn) The internal combustion engine of claim 1 further comprising a carrier housing removably received in the body; and
wherein the ignition source is carried by the carrier housing.

6. (Withdrawn) The internal combustion engine of claim 5 wherein the apertured member resides on the carrier housing.

7. (Withdrawn) The internal combustion engine of claim 6 wherein the apertured member is a shield housing encasing at least a portion of the ignition source.

8. (Withdrawn) The internal combustion engine of claim 1 wherein the apertured member is a housing encasing at least a portion of the ignition source.

9. (Withdrawn) The internal combustion engine of claim 1 wherein the apertured member is between the open end and the ignition source.

10. (Withdrawn) The internal combustion engine of claim 1 wherein the ignition source is at the end of the cavity opposing the open end.

11. (Withdrawn) The internal combustion engine of claim 1 wherein the ignition source is a center and ground electrodes of a spark plug.

12. (Withdrawn) The internal combustion engine of claim 11 wherein the apertured member resides on the spark plug.

13. (Withdrawn) The internal combustion engine of claim 1 wherein the body is adapted to interchangeably receive in at least one auxiliary combustion cavity at least a first carrier housing adapted to position the ignition source at a first position in relation to the main combustion chamber and a second carrier housing adapted to position the ignition source at a second position in relation to the main combustion chamber.

14. (Withdrawn) The internal combustion engine of claim 1 wherein the body is adapted to interchangeably receive in at least one auxiliary combustion cavity at least a first carrier housing and a second carrier housing, the first carrier housing adapted to carry the ignition source and having the apertured member thereon and the second carrier housing adapted to carry the ignition source and that omits the apertured member.

15. (Withdrawn) The internal combustion engine of claim 1 wherein the ignition source is a center and ground electrodes of a spark plug; and

wherein cavity is substantially cylindrical and a longitudinal central axis of the cavity substantially coincides with a longitudinal central axis of the spark plug.

16-28 (Canceled)

29. (Currently Amended) A method of combustng a dilute combustion mixture in a main combustion chamber of an internal combustion engine, comprising:

receiving a dilute combustion mixture in the main combustion chamber;

receiving in an auxiliary combustion cavity at least a portion of the dilute combustion mixture from the main combustion chamber through an open end of the auxiliary combustion cavity such that substantially all of the combustion mixture in the auxiliary combustion cavity is the dilute combustion mixture received from the main combustion chamber, the auxiliary combustion cavity being ~~disposed adjacent to and~~ outside of and adjoining the main combustion chamber and ~~substantially protecting at least a portion of the dilute combustion mixture adjacent an ignition source in the auxiliary combustion cavity opposite the open end from fluid flows in the main combustion chamber without inducing substantial additional flows adjacent the ignition source;~~

~~igniting with the ignition source~~ the dilute combustion mixture in the auxiliary combustion cavity with an ignition source in the auxiliary combustion cavity, the auxiliary combustion cavity sized to substantially protect the ignition source from fluid movement within the combustion chamber and cause at least a portion of the dilute combustion mixture adjacent the ignition source to be substantially quiescent; and

igniting at least a portion of the dilute combustion mixture in the main combustion chamber with the ignited dilute combustion mixture from the auxiliary combustion cavity.

30. (Original) The method of claim 29 further comprising jetting combustng dilute combustion mixture from the cavity into the combustion chamber through at least one aperture.

31. (Original) The method of claim 29 wherein the ignition source is a spark plug.

32. (Original) The method of claim 29 wherein the internal combustion engine is a reciprocating internal combustion engine.

33. (Original) The method of claim 29 wherein igniting the dilute combustion mixture in the cavity comprises supplying a voltage to the ignition source that is less than a voltage that would be required by the ignition source were it positioned outside of the cavity and in the combustion chamber.

34. (Original) The method of claim 29 wherein a temperature of the ignition source is less than a temperature of the ignition source were it positioned outside of the cavity and in the combustion chamber.

35. (Currently Amended) A component of an internal combustion engine system comprising:
a body defining at least a portion of a main combustion chamber, the main combustion chamber adapted to receive a dilute combustion mixture;
a compression member in the main combustion chamber movable to compress the dilute combustion mixture;
an auxiliary combustion cavity in the body disposed adjacent to and having an open end in fluid communication with the main combustion chamber, the auxiliary combustion cavity being adapted to receive a dilute portion of the dilute combustion mixture through the open end such that substantially all of the combustion mixture received in the auxiliary combustion cavity is provided from the dilute combustion mixture received from the main combustion chamber;
and
an ignition source residing in the auxiliary combustion cavity, the auxiliary combustion cavity ~~adapted~~ sized to create a substantially quiescent area about the ignition source.

36. (Canceled)

37. (Previously Presented) The component of an internal combustion engine system of claim 35 wherein the body is a cylinder head.

38. (Previously Presented) The component of an internal combustion engine system of claim 35 further comprising a carrier housing removably received in the body; and
wherein at least a portion of the ignition source is disposed in the carrier housing.

39. (Original) The component of an internal combustion engine system of claim 38 further comprising an apertured member residing on the carrier housing.

40. (Previously Presented) The component of an internal combustion engine system of claim 39 wherein the apertured member is a shield housing encasing at least a portion of the ignition source.

41. (Original) The component of an internal combustion engine system of claim 35 further comprising an apertured member encasing at least a portion of the ignition source.

42. (Original) The component of an internal combustion engine system of claim 41 wherein the apertured member is between the open end and the ignition source.

43. (Original) The component of an internal combustion engine system of claim 35 wherein the ignition source is at the end of the cavity opposing the open end.

44. (Original) The component of an internal combustion engine system of claim 35 wherein the ignition source is a center and ground electrodes of a spark plug.

45. (Previously Presented) The component of an internal combustion engine system of claim 35 wherein the body is adapted to interchangeably receive in at least one auxiliary combustion cavity at least a first carrier housing adapted to position the ignition source at a first position in relation to the main combustion chamber and a second carrier housing adapted to position the ignition source at a second position in relation to the main combustion chamber.

46. (Previously Presented) The component of an internal combustion engine system of claim 39 wherein the body is adapted to interchangeably receive at least a first carrier housing and a second carrier housing, the first carrier housing adapted to carry the ignition source and having the apertured member thereon and the second carrier housing adapted to carry the ignition source and that omits the apertured member.

47. (Previously Presented) The internal combustion engine system of claim 43 wherein a longitudinal central axis of the auxiliary combustion cavity substantially coincides with a longitudinal axis of the ignition source.

48. (Previously Presented) The internal combustion component of Claim 35 wherein the ignition source is disposed in the auxiliary combustion cavity a sufficient distance from the main combustion chamber to protect at least a portion of the dilute combustion mixture adjacent the ignition source from fluid flows in the main combustion chamber.